



CITYLAB

CO2 reductions from a range of initiatives

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Acknowledgements

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- The NCFRP 38 Project was led by José Holguin-Veras, Rensselaer Polytechnic Institute - lead partner in the Volvo Research and Education Foundations (VREF) Center of Excellence - Sustainable Urban Freight Systems: <https://coe-sufs.org>
- Context slides based on the NCFRP 38 Project Report





Overview of Initiatives

1. Logistical Management
2. Vehicle-Related Strategies
3. Traffic Management
4. Freight Demand / Land Use Management
5. Parking / Loading Areas Management
6. Pricing, Incentives, and Taxation
7. Infrastructure Management
8. Partnerships

Based on work led by RPI in the NCFRP 38 Project in the US.





Initiatives selected for the discussion

1. Logistical Management
2. Vehicle-Related Strategies
3. Traffic Management
4. Freight Demand / Land Use Management
5. Parking / Loading Areas Management
6. Pricing, Incentives, and Taxation
7. Infrastructure Management
8. Partnerships





Initiative Group 1: Logistical Management





Logistical Management

- Focus on altering the way deliveries are made
- Classified:
 - Urban Consolidation Centers
 - Intelligent Transportation Systems
 - Last Mile Delivery Practices





a. Urban Consolidation Centers





Urban Consolidation Centers

- Seek to reduce freight traffic in target area by consolidating cargo at a terminal
- Overall costs often higher than direct deliveries
- Difficulty to find enough suitable space in urban areas





Impacts and Challenges

Impacts:

- Increase vehicle load and reduce empty-running
- Cut down pollution
- Alleviate congestion
- Free-up space at stores
- Improve returns & waste management operations

Challenges:

- Lose control of supply chain
- Bear additional costs
- Low level of business uptake
- Increase vehicle trips if wrongly specified/organized





Last Mile Delivery Practices

- Time Slotting of Pick-Up/Deliveries: Reduce negative impacts of pick-up/deliveries to LTGs
- Driver Training Programs: Seek changes in driver behaviors to improve operational efficiency and safety
- Anti-idling Programs: Attempt to reduce pollution caused by idling trucks.
- Pick-up/Deliveries to Alternate Locations: Foster use of alternate locations such as lockers and drop-off boxes





Logistics management initiatives: Indicative urban traffic and environmental impacts (Draft for discussion)

Logistics management Initiatives	Peak goods vehicle traffic volumes	On-street space requirements of delivery/ collection	Fossil fuel consumption and air quality
Consolidation centre(s)	+	+	+
Improving loads carried on goods vehicles	+	+	+
Shared internal logistics operations for major multi-tenanted building or area	0	+	0 / +

KEY

++ major improvement; + some improvement; 0 no change; - some worsening; - - major worsening; n/a not relevant





Initiative Group 2: Vehicle Related Initiatives





Vehicle Related Strategies

- Seek to improve environmental conditions by fostering the use of technologies and practices leading to reductions of negative impacts related to freight vehicles
- Classified in
 - Emission Standards
 - Low Noise Delivery Programs / Regulations





Emission Standards

- Foster the use of vehicles producing less environmental impacts

Alternative fuels

Electric
Hybrid/Electric
Natural Gas (CNG and LNG)
Hydrogen

Vehicle design and components

Stop/start idling systems
Tractor unit aerodynamics
Trailer aerodynamics
Emission control retrofits
Low resistance tires





Emission Standards

- Result in vehicle fleets changes, thereby involve high capital investments, which are not usually absorbed by revenues
- May require additional infrastructure
- Require coordination, control and enforcement among municipalities and different agencies





Vehicle related initiatives: Indicative urban traffic and environmental impacts (Draft for discussion)

Vehicle related initiatives	Peak goods vehicle traffic volumes	On-street space requirements of delivery/ collection	Fossil fuel consumption and air quality
Electric and other alternatively fuelled goods vehicles	0 / -	0	+ / ++
Standards for vehicles: noise and emissions	-	-	+

KEY

**++ major improvement; + some improvement; 0 no change;
- some worsening; - - major worsening; n/a not relevant**





Initiative Group 4: Freight Demand/Land Use Management





Demand/Land Use Management

- Externalities addressed by modifying demand, instead of modifying logistical activities or vehicle traffic
- Classified:
 - Voluntary Off-Hour Delivery Program
 - Staggered Work Hours Program
 - Receiver-led Consolidation Program
 - Mode Shift Programs
 - Land Use Policy





Voluntary Off-Hour Delivery Program

- Induces a shift to deliveries made during the off-hours (7PM to 6AM), by providing incentives to receivers for their commitment to accept off-hours deliveries (OHD)
- Purpose: reduce congestion and pollution during daytime hours

Examples:

- PierPass Program, California
- OHD, New York City



There is public support...as reflected by media

THE WALL STREET JOURNAL
Thursday, July 1, 2010

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CONGESTION FIGHT RAMPED UP
New York City wants to unplug streets to make more room for delivery trucks.

Truckinginfo
The voice of Heavy Duty Trucking magazine

7/7/2010 New York to Ramp Up Off-Hour Deliveries
The New York City Department of Transportation has announced a pilot program to encourage truck drivers to make deliveries outside of peak hours.

crain's new york business.com
Article can be found at <http://www.crainnewyork.com/articles/20100701/FREE/100709981>

Nighttime truck-delivery test called a success
City's Department of Transportation says vehicles that participated in pilot program that operated between 7 p.m. and 6 a.m. saved about \$1,000 in parking fines alone.

By Jeremy Smerd
Published: July 1, 2010 - 2:57 pm

It seemed like a no-brainer. Trucks a month pilot program and thousands now that the program is over and they are continuing their newfound ways.

The city's Department of Transportation in parking fines alone, and saw its companies were paid \$300 per partner for having to make changes in their

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10 IDEAS TRANSPORTATION

DELIVER A FIX FOR TRAFFIC JAMS
BY JOSH BANBURN

THE NEXT TIME YOU'RE STUCK in traffic, blame all that stuff you buy online.

E-commerce sales jumped 15% last year, to \$186 billion in the U.S., and the daily volume of shipments for FedEx and UPS has grown every year since 2009. Moreover, to keep pace with demand for faster deliveries, many of the rigs dispatched by Amazon, eBay and Fresh Direct leave before they're fully stocked.

In other words, there are now more trucks, and more traffic, than ever. That increase helps explain why urban commuters waste at least 52 hours each year in stop-and-go jams, according to the Texas Transportation Institute.

There are a number of ways to address this problem, including a push for off-peak delivery (see sidebar). But one of the most promising new solutions is actually an old idea: bikes. In recent years, a growing number of cities have welcomed such services, partly to help the environment and partly to skirt—and alleviate—congestion. For example, B-Line, based in Portland, Ore., works with companies like Office Depot to transport parcels via electric tricycles, which can carry up to 600 lb. (270 kg) of freight at a time. CEO Franklin Jones says his six-bike, 15-person company has replaced 20,000 truck and van deliveries since it started in 2009, and B-Line plans to expand to Seattle later this year. Similar companies have launched in Boston, Vancouver and London, where bike deliveries from UPS were essential during the

crush of the 2012 Olympics.

The most inventive option, however, comes from Brussels. Last September, courier TNT Express loaded packages into a mobile trailer during the middle of the night, then towed it to a place near a populated area (but out of traffic zones). Come daybreak, messengers on electric tricycles took the packages to their destinations. If implemented on a wider scale, the strategy could lead to fewer trucks, reduced costs per stop and lower CO₂ emissions.

Although bikes can't fix delivery backups by themselves—they struggle with larger shipments—Hani Mahmassani, of Northwestern University's Transportation Center, sees their potential. "They're the best way to beat the traffic," he says.

THE RIGHT-BIGGEST SOLUTION

Bikes are great for delivering smaller packages, but what about the bulk items forcing trucks into rush-hour traffic? The answer, say most transportation experts, is simple: give businesses incentives to deliver during off-peak hours—perhaps to storage lockers like the ones Amazon offers. Here's how Manhattan could benefit if at least 20% of all package drop-offs occurred after 10 p.m., according to Jose Holguin-Veras of the Rensselaer Polytechnic Institute:

- LESS CURBSIDE CLOSING: Drivers could save three to five minutes of travel time each day, thanks to fewer trucks that would drive and park along busy streets.
- LOWER PRICES: Holguin-Veras estimates that trucking companies pay at least \$500 per truck each month in parking fines, which aren't levied at night. There's also less traffic after hours, meaning that trucks can get better gas mileage. Reducing that overhead would trim delivery costs across the board.
- MORE ECO-FRIENDLY VEHICLES: Because they make less noise—crucial during night deliveries on residential streets—electric vehicles could become more attractive.

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TIME March 25, 2013

Fleets Say They Discovered Time, Cost Bonanza Through New York's Night-Delivery Experiment
By Michele Fruehly Staff Reporter

When Joe Killian heard that New York City needed participants for its trial off-hour delivery program, he did more than volunteer for Kenney, N.J. trucking firm, New Deal Logistics. Killian persuaded eight Post Locker stores he supplies in Manhattan to volunteer, which meant the initial outlets agreed to substitute night deliveries for daytime ones.

Under the Hudson River, instead of leaving here at 7 a.m. and heading to the Holland Tunnel, trucks went on the other side—in 25 minutes, Killian said of the night trip.

For carriers in the pilot program, which lasted from October 2009 through January 2010, the results were dramatic.

Off-hour deliveries improved average travel speeds by as much as 75%, according to the study, submitted to one of the program's funders, the Research and Innovative Technology Administration, or RTI, of the U.S. Department of Transportation.

Adding to the off-hour benefit, data generated by Global Positioning System devices on the trucks showed that trucks delivering between 7 p.m. and 8 a.m. averaged 30 minutes at a receiver's site, compared with an average of 100 minutes during the day on streets clogged with traffic and lacking space to park.

(See CONGESTION, p. 3)

NYC Unveils Program for Delivery Truck Decongestion
By Josh Phillips Epoch Times Staff

NEW YORK—City officials are looking to reduce congestion on busy streets by using delivery trucks to transport their goods at night when the street is relatively quiet.

A small pilot test was conducted by the city's Department of Transportation, that found that companies that used trucks between 7 p.m. and 6 a.m. rather than at peak hours reduced costs, reduced congestion, and had a easier time finding parking. The federally-funded program took place last October.

Transportation Commissioner Janette Salak-Khan and other officials made an announcement of these findings on Thursday and encouraged more companies to try nighttime deliveries.

"Traffic is much lighter at night and there is not as much competition for a space," said Salak-Khan.

This far, 25 businesses, including Post Locker, Spivey, Whole Foods Market, and eight trucking companies, took part in the pilot experiment, which Salak-Khan said is the first of its kind in the nation.

"Deliveries were on time and didn't contribute to congestion," she said, while standing in front of a delivery truck on 14th Street in Manhattan.

In some instances, travel speeds for the nighttime delivery trucks experienced an improvement in speed by as much as 75 percent as well as a reduction in parking tickets. Parking tickets for each delivery truck exceeds \$1,000 a month on average and nighttime delivery significantly reduced those fees, the Department of Transportation found.

Joe Killian, a manager at New Deal Logistics, said that the "expansion of off-hour deliveries is a smart business decision" because rush space is very limited. Any change in keep traffic moving during normal hours will never be sufficient to meet the need," Killian added.

TIME magazine listed the OHD project as a "Top 10 Ideas" March 25th, 2013



Receiver-led Consolidation Program

- Deliveries are consolidated at one of the shippers' facilities
- One supplier delivers its goods to another one, and the latter make final delivery to common customer
- The lower the number of deliveries received, the more productive the business becomes
- Helps save time spent receiving goods, and minimizes interruptions to business





Mode Shift Programs

- Aim: to encourage use of alternative modes to reduce the number of trucks in the city center
- Major obstacle: finding modal alternatives competing with trucks is not often possible
- Pilot tests: it is possible to induce small changes to mode shifts in niche markets
 - La Petite Reine, France
 - MOVEBYBike in Gothenburg, Sweden
 - B-line in Portland, Oregon





Land Use Policy

- Regulates spatial concentration and distribution of economic activities related to freight
- The bulk of urban truck traffic is produced by small establishments in the food and retail sectors
- Includes: Relocation of Large Traffic Generators
 - More than half of industry sectors producing and consuming freight have constant freight-trip generation not depending on business size
 - It has high risk for unintended consequences





Freight demand/land use management initiatives: Indicative urban traffic and environmental impacts (Draft for discussion)

Freight demand / land use management initiatives	Peak goods vehicle traffic volumes	On-street space requirements of delivery/ collection	Fossil fuel consumption and air quality
Procurement practices	+	+	+
Retiming of logistics operations	+ / ++	0 / +	+ / ++
Logistics land use planning	+	0 / +	+
Use of non-road modes	0 / +	0 / +	0 / +

KEY

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As noted in the introductory slides the framework and the context slides are based on the NCFRP 38 Study - acknowledgements to Prof. José Holguin-Veras.

Presentation prepared by Michael Browne based on on the above and on reports drafted by Julian Allen. The issue of success factors in urban freight forms a core element in Task 2.3 in Work Package 2 of the CITYLAB Project.

However, views and comments expressed in the presentation are those of the presenter – Michael Browne.

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